AUXILIARY CLEANING TOOL OF VACUUM CLEANER

BACKGROUND

1. Field of the Invention

The present invention relates to a cleaning tool of a vacuum cleaner, and more particularly, to an auxiliary cleaning tool which is provided on a manipulation handle of a vacuum cleaner for cleaning a narrow space, and is easily switched between a cleaning mode and a standby mode.

2. Description of the Related Art

As well known, a vacuum cleaner performs sucking and removing of dust and contaminants from a cleaning surface by using a suction force generated by a vacuum-generating device, and is capable of cleaning not only a large space such as floors but also a narrow space such as a window sill.

In order to perform a variety of cleaning tasks, the vacuum cleaner generally includes a suction brush used as a main cleaning tool for cleaning large spaces, and a so-called ' crevice brush' , i.e., an auxiliary cleaning tool for cleaning narrow spaces.

FIG. 1 is a perspective view schematically showing an example of a general vacuum cleaner. As shown in FIG. 1, a reference numeral 10 indicates a cleaner body 10 in which main components such as a vacuum-generating device are mounted. To the cleaner body 10 is connected a flexible hose assembly 12 having a manipulation handle 11. An extension pipe 13 is removably connected to the manipulation handle 11. To an end of the extension pipe 13 is typically connected a suction brush 14 as a main cleaning tool.

The extension pipe 13 is also provided with a clip 16 attached thereon, for holding a crevice brush 15 used as an auxiliary cleaning tool when not in use.

According to the above-described construction of the vacuum cleaner, when a user wishes to use the crevice brush 15 instead of cleaning a large space, the user detaches the crevice brush 15 from the clip 16 and connects it to the extension pipe 13, replacing the suction brush 14. The crevice brush 15 can be connected to the manipulation handle 11 of the flexible hose assembly 12 for use.

However, the auxiliary cleaning tool of the conventional vacuum cleaner is inconvenient to use because a user has to connect the crevice brush 15 to the extension pipe 13 or the manipulation handle 11 for use, while he/she has to have the crevice brush 15 held by the clip 16 when it is not in use.

SUMMARY

The present invention has been developed in order to solve the above problem in the related art. Accordingly, an aspect of the present invention is to provide an auxiliary cleaning tool of a vacuum cleaner which is easy to use because it is switched to a cleaning mode or a standby mode by simple manipulation.

The above aspect is achieved by providing an auxiliary cleaning tool of a vacuum cleaner comprising a cleaning tool body and pivoting means. The cleaning tool body is disposed on a manipulation handle of the vacuum cleaner to be moved between a cleaning mode in which the cleaning tool body advances and a standby mode in which the cleaning body retreats. The cleaning tool body has a pair of cleaning tool members which are formed by symmetrically cutting a portion of the cleaning tool body of a cylinder shape along a longitudinal direction to define wedge-shaped recesses, each

recess being gradually narrowed from one side to the other side of the cleaning tool body. The cleaning tool members are connected to each other by hinge pins and pivot about the hinge pins to open and close. The pivoting means is for switching the cleaning tool body between the cleaning mode and the standby mode. In the cleaning mode, the pivoting means pivots to close to have one end narrowed in diameter, and in the standby mode, the pivoting means pivots to open to have one end extended in diameter.

The pivoting means comprises two pairs of guide protrusions, one guide protrusion in each pair being disposed in a rear portion of the cleaning tool member oppositely to the counter part guide protrusion in a symmetrical manner, and a slider connected with the cleaning tool body through the two pairs of guide protrusions, and having two pairs of guide holes corresponding to the guide protrusions to guide the movements of the guide protrusions, each pair of the guide holes being formed in an inclined manner so that a distance therebetween becomes gradually broader towards the rear portion.

BRIEF DESCRIPTION OF THE DRAWINGS

The above aspect and other features of the present invention will be more apparent by describing a preferred embodiment of the present invention with reference to the accompanying drawings, in which:

FIG. 1 is a perspective view showing an auxiliary cleaning tool provided in a general vacuum cleaner in a standby mode;

FIG. 2 is a perspective view showing an auxiliary cleaning tool of a vacuum cleaner according to a preferred embodiment of the present invention;

FIG. 3 is an exploded perspective view showing the cleaning tool body of the auxiliary cleaning tool as a main part of the present invention;

FIG. 4 is a view showing the cleaning tool body of FIG. 3 in an assembled state; and

FIGS. 5A to 5B are perspective views showing the auxiliary cleaning tools according to the preset invention, in a standby mode and a cleaning mode, respectively.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Hereinafter, a preferred embodiment of the present invention is described in great detail with reference to the accompanying drawings.

As shown in FIGS. 2 to 4, an auxiliary cleaning tool of a vacuum cleaner according to the preferred embodiment of the present invention, includes a cleaning tool body 30 disposed on a manipulation handle 20 to move thereon between a cleaning mode in which the cleaning tool body 30 advances and a standby mode in which the cleaning tool body 30 retreats, and pivoting means 40 for switching the cleaning tool body 30 to the cleaning mode or the standby mode. In the cleaning mode, the cleaning tool body 30 has one end narrowed in diameter, while in the standby mode, the cleaning body 30 has the end extended in diameter.

The cleaning tool body 30 has a pair of cleaning tool members 31, 32 which are formed by symmetrically cutting a portion of the cleaning tool body 30 of a cylinder shape along a longitudinal direction to define wedge-shaped recesses, each recess being gradually narrowed from one side to the other side of the cleaning tool body 30. The pair of cleaning tool members 31, 32 are connected to each other by hinge pins 33 and pivot about the hinge pins 33 to open and close.

Each of the cleaning tool member 31, 32 has a semicircular section and has both longitudinal sides inclined by as the wedge-recesses are cut. Accordingly, each of the cleaning tool members 31, 32 is in a tapered shape which gradually becomes narrower from one end to the other end.

Each hinge pin 33 is disposed at a position that is distanced from a front end of the cleaning tool member 31, 32 backward as much as 4/5 length of the cleaning tool member 31, 32. The cleaning tool members 31, 32 respectively have hinge pieces 31a, 32a, formed integrally therewith, into which the hinge pins 33 are inserted.

According to the above-described construction, the pair of cleaning tool members 31, 32 of the cleaning tool body 30 pivot about the hinge pins 33 to open and close. That is, the inward pivotal movements of the cleaning tool members 31, 32 cause the inclined surfaces thereof to closely contact with each other, and the outward pivotal movements cause the contrary. Accordingly, the cleaning tool body 30 has the end narrowed in diameter in the inward pivotal movements, while having the end extended in diameter in the outward pivotal movements.

The pivoting means 40 includes two pairs of guide protrusions 41, 42, one guide protrusion in each pair being disposed in a rear portion of the cleaning tool member 31, 32 oppositely to the counter part guide protrusion in symmetrical manner, and a slider 44 having two pairs of guide holes 43 corresponding to the guide protrusions 41, 42. The slider 44 is connected with the cleaning tool member 30 through two pairs of guide protrusions 41, 42. Also, the two pairs of guide holes 43 are formed in an inclined manner so that a distance therebetween becomes gradually broader towards the rear portion. It should be noted that, in FIG 2, only one pair of guide holes 43 are shown, while the other pair are hidden in corresponding portions.

Accordingly, when the guide protrusions 41 received in the guide holes 43 (hereinafter, one pair of the guide protrusions 41 will be described as a representative example) are moved to the front portions of the guide holes 43, the end of the cleaning tool body 30 is extended in diameter. When the guide protrusions 41 are moved to the rear portions of the guide holes 43, the end of the cleaning tool body 30 becomes narrowed in diameter.

Hereinafter, the operations of the auxiliary cleaning tool according to the present invention in a cleaning mode and a standby mode will be described.

FIG. 5A illustrates the cleaning tool body 30 of the manipulation handle 20 in a standby mode. As shown in FIG. 5A, the cleaning tool body 30 is in the retreated position of the manipulation handle 20 so that the guide protrusions 41 of the cleaning tool members 31, 32 are disposed in the front portions of the guide holes 43 defined the slider 44. With the auxiliary cleaning tool in the standby mode, the manipulation handle 20 is connected with an extension pipe or the like, thereby being capable of cleaning a large space with a main cleaning tool.

When a user wishes to use the auxiliary cleaning tool instead of the main cleaning tool, he/she separates the extension pipe from the manipulation handle 20 and moves the slider 44 to a forwarding portion of the manipulation handle 20. Then, the cleaning tool body 30 is moved to the cleaning mode. As the slider 44 advances, the guide protrusions 41 move along the guide holes 43 of the slider 44 so that the cleaning tool members 31, 32 pivot about the hinge pins 33 to close.

Finally, the cleaning tool body 30 has the end narrowed in diameter as shown in FIG. 5B, thereby being enabled to perform a cleaning suitable to a narrow space.

After the narrow space cleaning, the cleaning tool body 30 and the slider 44 are

retreated backward, and the cleaning tool body 30 is moved to the standby mode by the cooperation of the guide protrusions 41 and the guide holes 43. Accordingly, the end of the cleaning tool body 30 is extended in diameter.

As described above, the auxiliary cleaning tool can always be held by the manipulation handle without having to use an extra holding clip when not in use. Also, the auxiliary cleaning tool can be switched to the cleaning mode by a simple manipulation.

Since it is easy to switch the auxiliary cleaning tool between the cleaning mode and the standby mode by simple manipulation, a user has much convenience in using the vacuum cleaner, and there is no worries of losing the auxiliary cleaning tool.

That is, the vacuum cleaner according to the present invention satisfies the user's various needs and thus has higher competitiveness.

The foregoing embodiment and advantages are merely exemplary and are not to be construed as limiting the present invention. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the recited function and not only structural equivalents but also equivalent structures.